DOCUMENT RESUME

ED 211 316 CG 015 709

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TITLE Women Entering Traditionally Male Professions: Relationship of Personality Measures to Achievement and Stress.
PUB DATE Apr 81
NOTE 11p.; Paper presented at the Annual Meeting of the Eastern Psychological Association (52nd, New York, NY, April 22-25, 1981). For related document, see CG 015 418.

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Achievement Need; College Students; Fear of Success; *Females; Higher Education; Measures (Individuals); *Nontraditional Occupations; Physical Health; *Psychological Characteristics; *Self Esteem; *Stress Variables; Student Characteristics; Success

ABSTRACT

The underrepresentation of women in high status, traditionally male professions can be attributed to sex-role socialization and discrimination. To examine the relationship between personal characteristics and stress in a sex-role incongruent situation, female (N=64) and male (N=21) engineering, management, and pre-medical students completed measures of achievement motivation, fear of success, sex-role orientation, and social self-esteem. The personality measures were used: (1) to predict grade point average (GPA); (2) with GPA to predict perceived success; and (3) with perceived success to predict five stress and illness measures. High achievement motivation and low social self-esteem predicted higher GPA's. Perceived success and social self-esteem were the strongest predictors of the stress and illness measures. Lower levels on these personal variables were related to detrimental effects for women entering traditionally male professions. The findings suggest that these personality scales, considered alone, do not account for much of the variance in stress and health. (Author/RC)

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# WOMEN ENTERING TRADITIONALLY MALE PROFESSIONS: RELATIONSHIP OF PERSONALITY MEASURES TO ACHIEVEMENT AND STRESS

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Paper presented at the Annual Meeting of the Eastern Psychological Association, New York, NY, April 22-25, 1981.

CG 015709

# Women Entering Traditionally Male Professions: Relationship of Personality Measures to Achievement and Stress

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Paper presented at Eastern Psychological Association Meetings, 1981

The underrepresentation of women in high status, traditionally male professions can be attributed both to sex-role socialization, which reduces the number of women who are willing and able to assume these positions, and to discrimination, which limits the opportunities of able women who aspire to these positions (cf. O'Leary, 1974; Terborg, 1977). The premise underlying the present research is that women who have chosen to enter traditionally male professions still may suffer from the sex-role incongruent nature of their work. The amount of stress experienced in this situation probably is related to personal characteristics. We focused our investigation on four standardized personality scales because of their relevance to sex-role socialization and achievement in a sex-role incongruent situation.

Achievement motivation. We included a measure of achievement motivation (Mehrabian & Bank, 1978) because this motivation seems necessary for success and happiness in high status professions, whether the achievers are male or female. Achievement motivation does predict scholastic performance (Herman, 1970; Farley, 1972), which we used as a measure of achievement in this study. Negative correlations between achievement motivation and anxiety and neuroticism also have been reported (Atkinson, 1964; Eysenck & Eysenck, 1968; Mehrabian, 1968, 1969).

Fear of success. Although motivation to achieve may be important in these careers, conflicts regarding success may be especially important for women in nontraditional work roles; therefore, we included an objective measure of fear of success (Zuckerman & Allison, 1976). Although fear of success need not be regarded as a motivation, expectations of negative consequences following from success may inhibit achievement or produce stress in traditionally male achievement settings. High fear of success scores have been found to relate to lower achievement on an anagram task (Major, 1979; Zuckerman & Allison, 1976) and to higher anxiety in achievement settings, as measured by test anxiety (Pappo, 1972).

Sex-role orientation. Because we are investigating traditionally male work roles, we expected that women who perceive themselves as possessing socially desirable traits which are stereotypically masculine would achieve more and suffer from stress less than other women. Masculinity is related to successful performance of at least some kinds of achievement tasks (Major, 1979). As comfort in performing traditionally

masculine tasks is not precluded by possession of socially desirable feminine traits (Helmreich, Spence, & Holahan, 1979), it is necessary to measure masculinity and femininity independently. We used the Self Scale of the Personal Attributes Questionnaire, scoring separately the sub-scale of traits that are considered masculine but desirable in either sex and the sub-scale of traits that are considered feminine but desirable in either sex (Spence, Helmreich, & Stapp, 1974).

Social self-esteem. Working in a sex-role incongruent career also can cause interpersonal difficulties (Darley, 1976; Kanter, 1977). Feeling that one is competent in social situations should reduce the stress of these situations and could be related to successful achievement as well. We used the Texas Social Behavior Inventory to measure social self-esteem (Helmreich, Stapp, & Ervin, 1974).

Interrelationships of personality scales. These four measures obviously are related; but the direction of the relationships is not obvious, especially in our sample of women who already have chosen careers in traditionally male professions that are characterized by strong achievement pressures. Our general view of achievement in these work situations as incongruent with the traditional sex role led us to expect relationships which have been found in some of the previous research using less specialized subject samples. First, we expected the masculinity scale, composed of traits which are primarily instrumental or agenic, to correlate positive with achievement motivation (Major, 1979) and negatively with fear of success (cf. Major, 1979). Consistent with these, we expected achievement motivation and fear of success to be inversely correlated (Zuckerman & Allison, 1976). We expected the femininity scale (primarily expressive traits) as well as the instrumental masculinity traits to correlate positively with social self-esteem (Spence, Helmreich, & Stapp, 1974).

## Method

Subjects. As part of a larger study, a questionnaire was administered to 64 women and a small comparison group of men (n=21) who were students in the engineering, management, and pre-medicine programs at a small, highly selective university. Subjects were volunteers who agreed to answer the questionnaire for a small payment.

Procedure. Subjects completed the questionnaire in mixed-sex groups and were not aware that women's adjustment to a nontraditional role was of primary interest. Near the end of the questionnaire were five measures of stress and illness. These were a symptom checklist (Indik, Slesinger, & Seashore, 1964), an anxiety-depression-irritation index (Caplan et al., 1975), an estimate of number of doctor visits during the past semester, an illness inventory (Masuda, Wyler, & Holmes, 1970), and a one-item rating of stress associated with work this semester. The standardized personality scales were positioned after the stress/health measures and were the last items in the questionnaire. They were arranged in the following sequence: achievement motivation, fear of success, self esteem, and sex-role orientation. These personality measures were

tested within each sex for correlations with each other, with the stress/health measures, and with two measures of achievement (grade point average and a self-rating of one's current success relative to other students in one's major). In addition, stepwise multiple regressions were performed for the women.

## Results and Discussion

Because stepwise multiple regressions were used, results are presented only for those subjects who completed all measures. The male sample is very small and may be less representative than the female sample; results are presented for comparison with the results for women, but no direct tests for sex differences were conducted. Examination of the mean responses for women and men (Table 1) indicates that the two groups were similar in their levels on the variables of interest. Results of the correlation analyses (for both sexes) and of the regression analyses (women only) are presented in Tables 2 & 3. In the stepwise multiple regressions, the personality measures were used alone to predict GPA, with GPA to predict Perceived Success (perceptions of current success relative to others in one's program), and with Perceived Success to predict the five stress and illness measures.

The intercorrelations of the personality scales generally support the predictions except that femininity correlates with social self-esteem only for males. As would be expected when predictors are intercorrelated, comparison of the correlation and regression analyses indicates that some predictors that exhibited moderate correlations with a predicted variable are not independently related to that variable. For example, when GPA has been added to the prediction equation for perceived success, it is held constant (or controlled for) and achievement motivation would not improve the prediction equation. Likewise, masculinity does not improve the prediction of symptoms after perceived success and social self-esteem are entered. Furthermore, some variables that exhibit very low simple correlations with a predicted variable do account for some of the variance in that variable when other predictors have been controlled for by prior entry into the prediction equation. See, for example, Stress.

The best predictors of current achievement in terms of GPA were high achievement motivation and low social self-esteem, but they accounted for only 17% of the variance in GPA. The same two variables would have been the best predictors of perceived success if GPA had not been used as a predictor; but, again, the equation without GPA would have accounted for a much smaller percentage of the variance in perceived success (13%). Thus, other factors associated with GPA appear to be more important predictors of current achievement than the personality scales included herein.

This point has implications for the measures of stress and health because, overall, perceived success was one of the best predictors of these measures. The only better predictor was social self-esteem, indicating that some variance in social self-esteem that was not associated with perceived success was independently associated with the stress/health measures. In this connection, note that low social self-esteem was associated with higher GPA and perceived success but with poorer standing on the stress/health measures. Both low perceived success and low social self-esteem appear to be detrimental for women preparing for these traditionally male professions, but these two factors do not tend to covary ($r$=-.08) and, thus, probably reflect different underlying processes.

Beyond that, conclusions concerning the adaptiveness of these personal characteristics are even more complex. The safest statement is that these personality scales, considered alone, do not account for much of the variance in stress and health. Another analysis by these authors (Gerdes, Imperatrice, & Sunday, 1981) which included external variables (such as perceived discrimination) and more variables related to success in addition to these personality scales accounted for significantly greater portions of the variance in all of these stress and health measures except the anxiety, depression, irritation scale. In fact, controlling for these additional variables also resulted in the personality scales entering the prediction equations more often.

We are currently collecting data on a larger sample of students, which will allow us to test the stability of these relationships. In addition, a larger and more representative comparison group of males will allow us to test for differences between the means and predictors found for women and for men preparing for traditionally male professions. Inclusion of women in traditionally female fields also will aid us in determining how specific these relationships are to nontraditional women.

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Table 1

Means and Standard Deviations of Measures (with Ranges of Possible Scores in Parentheses)

| | Women (n=56) | | Men (n=19) | |
|---|---|---|---|---|
| | M | SD | M | SD |
| Achievement Motivation (-152 to 152) | 64.68 | 29.47 | 61.32 | 32.13 |
| Fear of Success (27 to 189) | 103.84 | 15.02 | 103.16 | 10.78 |
| Social Self-esteem (32 to 160) | 84.50 | 18.08 | 82.05 | 19.97 |
| Masculinity (5 to 115) | 84.41 | 9.21 | 84.00 | 11.17 |
| Femininity (18 to 90) | 71.66 | 8.22 | 67.74 | 8.46 |
| GPA (on 4 point scale) | 3.07 | 0.53 | 3.05 | 0.48 |
| Perceived Success ( 1 to 6 ) | 3.16 | 1.23 | 3.11 | 1.20 |
| Symptom Checklist (15 to 45) | 23.63 | 4.37 | 22.63 | 3.62 |
| Anxiety/Depression/Irritation (20 to 80) | 37.23 | 8.35 | 38.58 | 7.20 |
| Doctor Visits (Number last semester) | 1.45 | 2.06 | 1.26 | 1.85 |
| No. of Illnesses (weighted: mild x 1, mod. x 2, sev. x 3) | 10.88 | 6.26 | 9.58 | 7.03 |
| Stress this semester (1 to 9) | 6.11 | 1.87 | 5.74 | 2.62 |

Table 2

Intercorrelations of Personality Variables

| | Ach. Mot. | FOS | Self-est. | Masc. | Fem. |
|---|---|---|---|---|---|
| Achievement Motivation | 1.00 | -.30* | .49** | .62** | .19 |
| FOS | -.43 | 1.00 | -.14 | -.19 | -.17 |
| Self-esteem | .54* | -.35 | 1.00 | .72** | .15 |
| Masculinity | .67** | -.54* | .83** | 1.00 | -.02 |
| Femininity | .45 | -.27 | .68** | .60** | 1.00 |

Note. Women (n=56) above the diagonal and men (n=19) below.
*p < .05 ** p < .01 or better

Table 3

Correlation Coefficients and Standardized Regression Coefficients for Predicted Variables

| PREDICTORS | GPA | | Perceived Success | | Symptoms | | AnxDepIrr | | Dr. Visits | | Illness | | Stress | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WOMEN (n=56) | r | beta | r | beta | r | beta | r | beta | r | beta | r | beta | r | beta |
| Achievement Motivation | .22 | .44** | .30* | | -.28 | | -.21 | .15 | -.07 | | -.25 | | -.01 | .26 |
| Fear of Success | -.05 | | -.15 | -.08 | .05 | | .04 | | -.31* | -.40** | .06 | | .01 | |
| Social self-esteem | -.23 | -.45** | -.08 | | -.34* | -.37** | -.46** | -.49** | .11 | | -.26 | | -.35* | -.71** |
| Masculinity | -.01 | | .12 | .11 | -.31* | | -.25 | | .13 | | -.27 | -.27* | -.10 | .28 |
| Femininity | .02 | | .03 | | -.15 | | -.43** | -.38** | -.12 | -.18 | .11 | | .05 | |
| GPA | | | .86** | .86** | -.22 | — | -.01 | — | -.37* | — | -.08 | — | .04 | — |
| Perceived Success | | | | | -.29* | -.31* | -.09 | -.16 | -.37* | -.43** | -.12 | | -.13 | -.30** |
| ADJUSTED $R^2$ | | .17** | | .75** | | .19** | | .32** | | .26** | | .06* | | .20** |
| MEN (n=19) | | | | | | | | | | | | | | |
| Achievement Motivation | -.20 | | .26 | | .15 | | -.18 | | .47* | | -.28 | | .34 | |
| Fear of Success | .33 | | .17 | | .30 | | .23 | | -.29 | | .21 | | .06 | |
| Social Self-esteem | -.28 | | .18 | | -.07 | | -.30 | | .46* | | .17 | | .40 | |
| Masculinity | -.21 | | .25 | | .03 | | -.23 | | .45 | | .12 | | .35 | |
| Femininity | -.35 | | -.10 | | .20 | | -.06 | | .39 | | .24 | | .64** | |
| GPA | | | .63** | | -.06 | | -.02 | | -.28 | | -.05 | | -.51* | |
| Perceived Success | | | | | .07 | | -.29 | | .19 | | -.09 | | -.24 | |

Note. The standardized beta coefficients are taken from the regression equation at the point where the next predictor entered into the equation would decrease the Adjusted $R^2$. The Adjusted $R^2$ is a conservative estimate of the percent of variance in the predicted variable that is accounted for by the predictors in the equation; it is especially appropriate when sample size is small. Each beta was tested by the standard regression method to determine whether it would add a significant increment to $R^2$ if all the other predictors in the equation had been added first.

*$p < .05$
**$p < .01$ or better